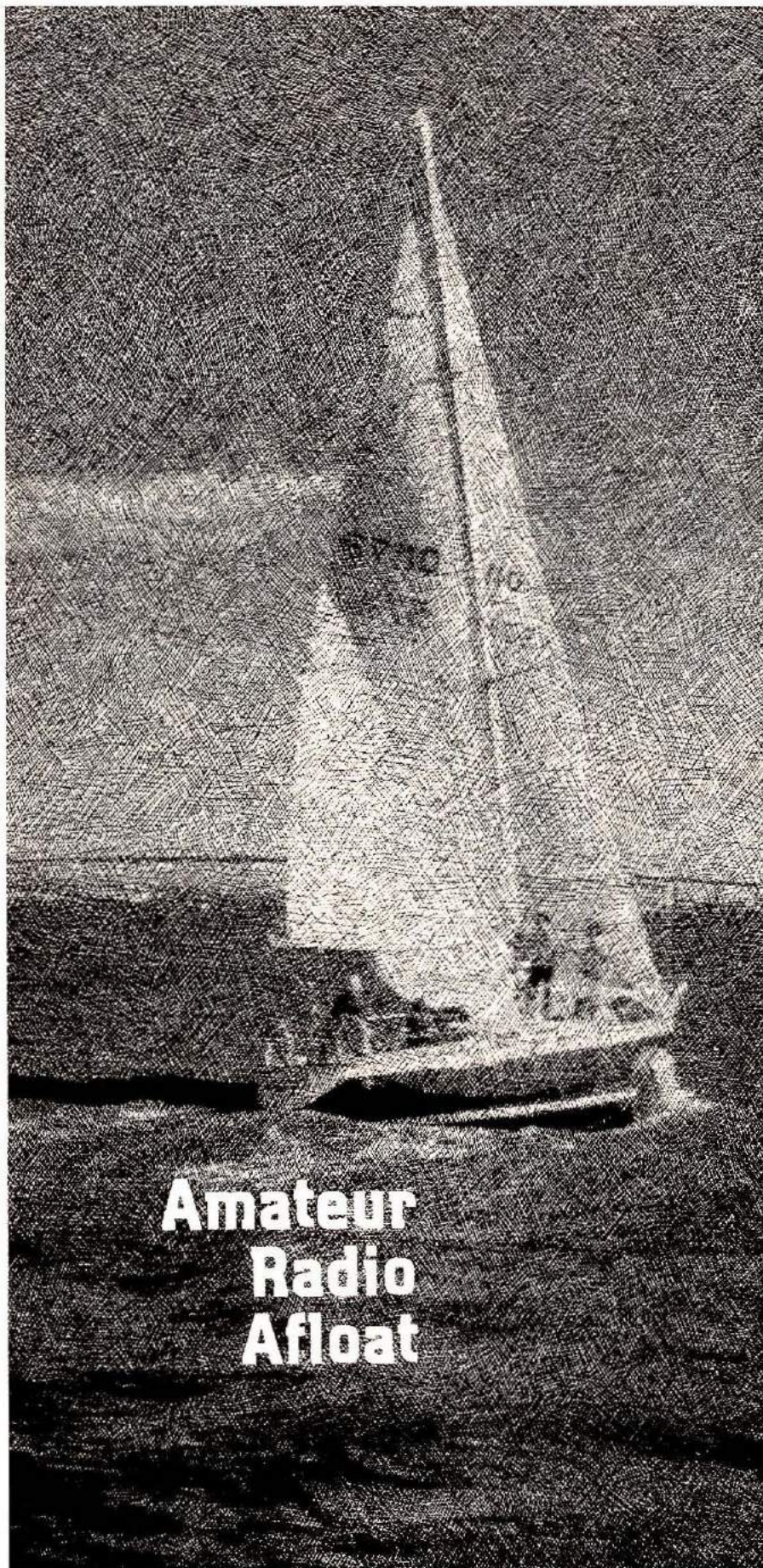




Amateur Radio Afloat

BY HERB JOHNSON, W6QKI

The America's Cup races — you've heard of them, even watched parts of the big event on television. It's a beautiful and exciting scene, with acres of sail catching the wind, enough whitecaps and spray to make the crew step lively, and hordes of spectator craft being herded about by the Coast Guard and race officials. The onlookers seem to be having a great time, and those ashore are caught up in the enthusiasm of the day. Aboard the racing yachts the atmosphere is all business — they're enjoying the race too, from the viewpoint that all competitors enjoy a keen and well-fought race. This is the *World Series* of boat racing; the culmination of years of training and preparation. Trials and eliminations have narrowed the field to the best sailing boat and crew that each participating nation can offer. They're here to try to capture the prize Cup — one that was first won by the yacht *America* in a series of races that started in 1851.

Behind the scenes, Amateur Radio is doing its part in the race, too. I am thinking particularly of the America's Cup race in 1974. Amateur Radio was useful not only at the time of the race, but also during the long trials to select the defender to represent the United States through the New York Yacht Club. There are a lot of people interested in keeping in touch with how things are going: people who provided backing for the boats, of course, and friends and relatives of the crew members and the news media. When you have a crew of, say 7 to 12 men on each boat, the involved audience can grow to sizable proportions. I had an Amateur transceiver — it weighed only seven pounds and was not much larger than an average CB set — set up on board a spectator boat that was keeping track of the progress

of the race between the *Intrepid* and the *Courageous* during the elimination trials. This *Intrepid* was backed by a West Coast syndicate, called Intrepid West, so there was a lot of distance to be covered to let the people know what was happening.

A regular schedule was set up with some Amateur stations on the West Coast, and that operation grew to a large network involving stations in San Francisco, Los Angeles, Newport Beach, San Diego, and Seattle. Eventually, some stations in Miami, Houston, and the Great Lakes area joined in. There is an amusing sidelight to this, too. The man in charge of public relations for Intrepid West had a little office down at the docks in Newport,

Rhode Island, and as soon as the boats were out on the sound, he was out of touch with what was happening. One day, during a telephone call to the West Coast, someone there told him how things were going at the trials. He was astounded, and wondered how they knew so much more about it than he did. Later, he talked to me about it, and I gave him a spare receiver and set it up so he could listen in to our Amateur network. That was an exciting time, and an instance when Amateur Radio was providing one of its great services — keeping friends and relatives informed.

Why amateur radio?

There are scores of reasons why Amateur Radio is a good choice to have aboard a boat, whether it's a small craft that never strays far from shore, or

a *blue-water* boat that is used for ocean sailing. But before I get into some of the reasons, let me clearly emphasize that having Amateur radio aboard in no way relieves you of the responsibility of having on board the communication facilities that are required by the Coast Guard; they require that you be able to communicate on channels that they use for safety and advisory messages, and those channels that they monitor for distress calls.

Amateur Radio can handle emergency messages, too, and I'll tell you more about that shortly. But the vast coverage of ham radio, in terms of distance, and in the numbers of people who are hams, makes this type of communications ever so much more useful and enjoyable. You'll be talking to the whole world; it is not



Independence — A new 12-meter racer, designed and sailed by Ted Hood, crossing the bow of *Courageous* in a practice race off Marblehead, Massachusetts during a tune-up session in the fall of 1976. *Courageous* was the successful defender of the America's Cup last time (photo by the Naked Eye, Marblehead, Massachusetts).





A neat shipboard Amateur radio installation using an older tube-type transceiver with a crystal-controlled fixed-frequency attachment. These rigs do their job well, but place a burden on the vessel's power source just to keep the tubes warm.

unusual to find several boating enthusiasts sharing the airwaves with you. How much more friendly and interesting your next port of call will be if you have been talking to someone there who can advise you about facilities, supplies, anchorages, and perhaps be part of a welcoming committee when you arrive.

Because of the great selection of frequencies that Amateurs are able to use, you could be talking to almost anywhere — from England to the Mediterranean to Africa; from Japan to the Philippines to Australia. You'll always find someone to chat with, and on almost any subject from chess to anthropology to sailing to scuba diving. None of this is permitted on the channels allocated to the Marine radio service.

Amateur Radio has more than paid its way in providing

emergency communications, too. This phase of Amateur Radio is well covered in an article by Anthony Curtis, K3RXK, elsewhere in this issue, but let me tell you of a recent case where a combination of the right equipment and the technical skill acquired while studying for the Amateur license was instrumental in getting people out of a bad situation, and perhaps in saving lives as well.

In the summer of 1976 a 61-foot (18.6m) racing/cruising yacht, the *Sorcery*, was crossing the Pacific from Japan to San Francisco. They were more than one thousand miles from shore, in a storm, when a freak wave hit the ship and rolled it over. In addition to dismasting the boat, the wave had carried away the life rafts, and disabled the engines and the source of power for their regular com-

munications equipment.

Many of the eleven people on board were injured — one seriously. A fuel drum fell on the leg of one girl, causing either multiple or compound fractures; a very serious condition anywhere, let alone on a disabled craft in the middle of the ocean.

One of the people aboard, a woman, was a radio amateur, and had a transceiver with her. Again, it was a little 7-pound (3.2kg) box, and it was the only piece of communications equipment that was working that morning. Thanks to the study required for the Amateur license, she knew what to do, and soon they had strung a 20-foot (6m) wire across the deck — there was no mast to hoist it up on — and put forth a "Mayday" call. The first answer was from a ham in Alaska; he got in touch with the woman's husband in Escondido, California. They were joined by hams in Hawaii and in Seattle, Washington. The Coast Guard soon came up on the frequency, and not long after that the captain of a Danish freighter overheard the conversation and determined from his location that he was the nearest one to the stricken *Sorcery*. About 24 hours later he came alongside her. Meanwhile, the Coast Guard had a plane on the way to drop life rafts and pumps if the freighter was unable to do anything. A Coast Guard cutter arrived later and took the *Sorcery* in tow, and brought the injured crew aboard. Without that little Amateur transceiver, it could have been a far more tragic story.

Amateur radio equipment

You need two things to take advantage of the usefulness of Amateur Radio: a transceiver (or transmitter and receiver) for the ham bands, and a license to use it. I'll tell you more about the license and how to get it a bit later, but for the moment let's talk about equipment.

First, don't expect the dealer who handles your Marine radio equipment to know much about Amateur equipment, or to have it available. It is usually outside his line of experience, in what it will do, how it is installed, and more important, what makes Amateur Radio a natural for the sailing enthusiast.

There are several ways to go about finding a dealer who has Amateur Radio equipment, and many of these same routes can be used to find people who will help you in getting the Amateur license that you will need. In the larger metropolitan areas, a search through the *Yellow Pages* will usually tip you off to the names of a distributor of electronic parts, equipment, and supplies. These are excellent places to start. Even if these distributors don't have Amateur equipment, they will usually be able to refer you to someone who does. If that search turns up a dead-end, then you can start looking for anything or anyone connected with electronics. This can be almost anything — the local a-m radio station, fm broadcast, TV station, or a shop that repairs and sells CB, TV, and Hi-Fi sets. It is not likely that many of them will be involved directly in Amateur Radio from the equipment standpoint, but they will usually have heard of one or several Amateurs, and can help you get in touch with them.

The Amateur, in turn, will almost always be happy to help in any way he can to make it possible for you to join his fraternity, and can steer you to a dealer who sells equipment. He can also help by letting you look through some of the Amateur magazines and journals, where all of the better manufacturers advertise their wares and list their dealers and distributors. If you live in a town so small that it has no local electronic facility of any kind — and it would have to be a small place indeed that had no nearby a-m or fm broadcast station — try the maintenance



An amateur radio installation on the bridge of a power cruiser. The small white box to the right of the transceiver is an antenna tuner which permits the use of a random length of wire for all bands. The equipment is secured by brackets.

people at the local telephone company. Amateur Radio is not unknown to those who deal in communications-by-wire.

Oh, yes, I would like to point out that CB, while it certainly has its uses, falls far short of the capability of Amateur Radio. It has limited power (5 watts) and very short range. Further, the Coast Guard does not monitor CB, and usually does not have equipment capable of operating on CB frequencies.

Amateur Radio, on the other hand, allows the use of up to 1000 watts of power in the final stage, and can be operated over such a wide range of frequencies that it is not hard to find a frequency band that will cover the required distance. Further, most military (Coast Guard) equipment has tremendous frequency-changing capability, which will allow them to find you on a

ham band, and, in case of emergency, communicate with you there.

What kind?

In terms of distance to be covered by Amateur Radio communications, there are two categories to consider. The globe-spanning type of operation that I have been talking about is done in what is termed the high-frequency part of the spectrum. This ranges from the segment just above the broadcast band (1.8 to 2.0 MHz) up to the 10-meter band (just above the CB channels). The most useful areas will be the 40, 20, and 15 meter bands (7.0, 14.0, and 21.0 MHz). Equipment that will cover these three bands will allow you to communicate with Amateurs at home stations or on other boats at distances varying from dozens to thousands of miles, depending upon the reflectivity



The author operating aboard his sloop *Vector*. This compact installation includes equipment for Amateur-band SSB, 2-meter fm, and vhf Marine Band operation. There is also room for an antenna tuner and a crystal-control adapter for the SSB transmitter.

or absorption of the ionosphere at the time. Maritime operation is not permitted in most areas on the two lower Amateur bands (160 and 80 meters).

An area of increasing importance, especially to those who do not venture far from shore, is vhf, (Very High-Frequency). The Amateur two-meter (144-MHz) band is the most popular, and is made more useful by the growth of repeaters on that band. A repeater is a station that receives a signal, amplifies it, and retransmits it with much greater power. They are usually located where they can take advantage of height — a mountain, hill, or tall tower — to increase their range. It is not unusual to be able to talk across distances up to 50 or 75 miles (80-120km) while using a low-powered unit connected to a 19-inch (48cm) antenna at the top of a mast.

There are several types and brands of equipment to choose from, as you will discover when you start talking to dealers or Amateurs about what to buy. You can make a reasonable choice by looking at the specifications and keeping a few simple requirements in mind. Two uppermost thoughts

should be power consumption and frequency range. For best economy in power consumption, the unit should be all solid-state, that is, transistorized. Tubes require that the filament (heater) be kept warm all the time, thus placing a heavy drain on your power source even when you are just listening. A few of the modern transceivers have tubes in the high-powered output stage only, with the rest of the circuitry handled by transistors. Some of these have provisions to bypass the tube section, allowing an output of just a few watts instead of the hundreds available with the tubes.

Among Amateur transceivers

that provide output in the better-than-hundred-watt range are the Atlas 210X, 215X and 350-XL; Ten-Tec Triton IV; the Yaesu FT-101E, and the Heath SB104 and HW104. All of these can be operated directly from a 12-volt supply or battery, and cover the high-frequency Amateur bands.

Installation

There are three things to consider when installing Amateur equipment on a boat; transceiver placement, antenna location, and a ground system. When you install the transceiver, convenience in operating it and protection from salt spray or leaks should be kept in mind. This usually means that the equipment will be in a compartment or cabin, where it can be used by an operator in more or less comfortable surroundings. If you must hear what is being received from an exposed or remote location, an extension speaker is the answer. Most modern transceivers are set up so you can plug in an external speaker for just this purpose. Bear in mind that when you are protecting the transceiver from spray and leakage that the heatsink fins on the back of the unit require good free-air circulation for proper cooling.

If a plug-in or quick-disconnect type of mount is available for the equipment you choose, it might be a

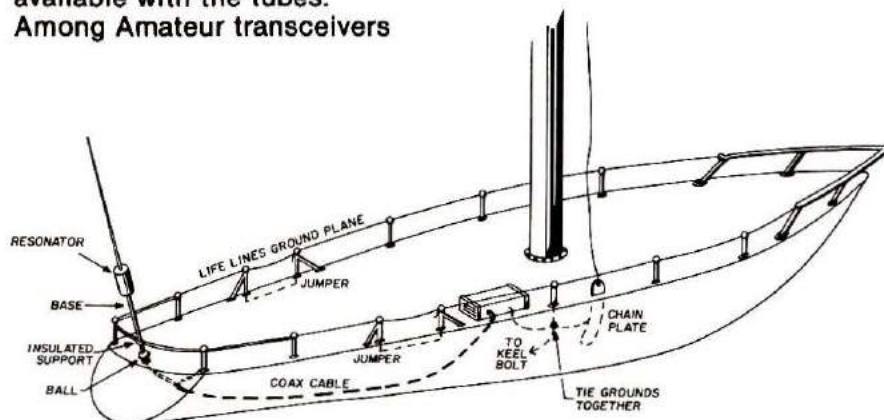


Fig. 1. The life lines on a sailboat can be used as a ground-plane system. Jumpers must be used to bridge the gap at the gates. Life lines, chain plates, and metal keel should all be tied together to obtain a good ground for the antenna to work against. A ball mount and insulated support fastens the antenna securely.

worthwhile investment. The easy-removal feature will allow you to store the equipment in safer or dryer surroundings during extended periods of inactivity (or you can take it home and use it between voyages).

The equipment is usually supplied with enough heavy cable to reach to the battery in an average automobile, but this may not be enough for some boats. The cable can be extended by using a heavy wire, 10 or 8 gauge (2.5-3.5mm) to splice on as needed. A fuse or circuit breaker should be installed at the battery end of the run.

Grounds

Ground connections can be as varied as there are types of boats. Sailing craft will require treatment different from power boats. Large bodies of water provide an essentially perfect *ground plane* for the launching of a radio signal into the ionosphere, but the problem appears when you try to connect to it.

Of course, a good ground connection at the transceiver itself is the first place to start, and this should not only be a ground for the power source but a ground for the radio-frequency energy as well. If your craft has a steel or aluminum hull, you are in luck; a good connection to the hull at the end of the coaxial cable from the transceiver, and at the transceiver, will do the job nicely.

Another type of ground can be made by using metal life lines, if the boat has that type running along the starboard and port sides (see Fig. 1). These lines can form a *counterpoise* system that is just as effective as a direct connection to the ocean or lake. You must watch for breaks in the life line, such as at the gate used to board the vessel, or at the bow or stern. Where such gaps occur, a jumper wire or cable must be used to bridge the open space to complete the ground. This can be done by running a stainless steel strap under the

deck between the stanchions to connect the starboard and the port lines together. The jumper doesn't have to be very thick, but should be 3/8 to 1/2 inch, (10-13mm) wide. Braided copper or bronze strap will work, also, but stainless is preferable because of its anticorrosion properties. Be sure that any fittings in the life lines are clean, tight, and make good metallic contact.

A keel makes an excellent ground system, especially if it is of the solid-lead type. All that is necessary is to run a good ground strap from the equipment to the nearest keep bolt. Be sure, however, that you make a good clean electrical connection to this bolt. You can also drill and tap into the lead for a connection separate from a keel bolt if you like. One type of keel to avoid is the type that is made up of several pieces of metal; they may not all be making good contact with each other, and would serve as a poor ground. A solid-metal keel is a good ground even if it is encased in a wood



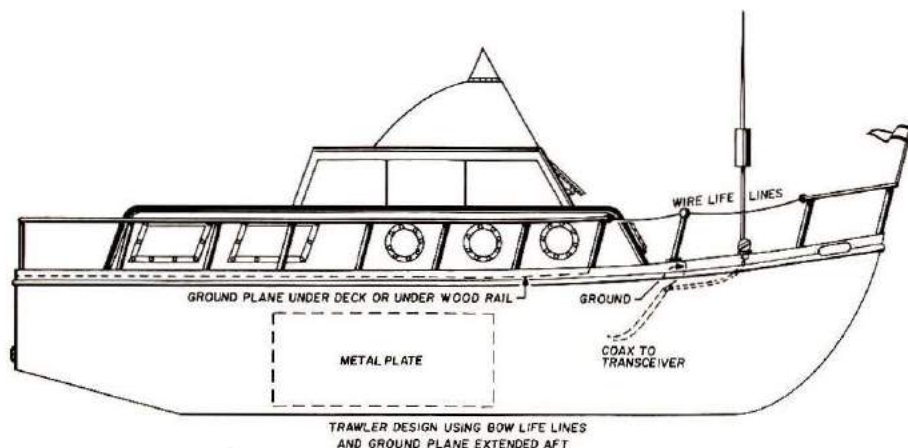


Fig. 2. Some power boats have wood rails, so you must place a ground plane under the deck, or under the rail itself. This can be a piece of stainless steel strap or copper braid. A metal plate, either inside or outside the hull, can be used by itself or in addition to the life lines or rail.

or fiberglass hull. The insulating material (wood or fiberglass) still allows efficient coupling between the metal keel and the water around it.

A boat which has neither life lines nor a metal keel, such as a power boat with a wooden or fiberglass hull, will likely require a metal plate for a ground (Fig. 2). It can be either inside or outside the hull. An internal plate should be at least 20 square feet (1.8m²) in size, and laid up against the hull below the waterline. It can be made up of two or more sections, connected together and covered with fiberglass for protection. The metal can be quite thin, and stainless steel is best.

An external ground plate will be more difficult to install, but it can be smaller in area. An adequate size would be approximately 10 square feet (0.9m²). It can be cemented in place below the waterline, and covered with fiberglass. Do not depend on the propeller shaft to provide an adequate ground for radio equipment and antenna systems.

You can tie several ground systems together for even greater efficiency. For example, you can connect the life line stanchions to the keel with stainless steel strapping. The mast should already be connected to the keel and/or life lines for lightning

protection, but check to be sure. Don't forget to run a good strap to the engine and the battery ground (usually negative) terminal. You can't install too many ground systems, but you may easily have too few.

Antenna systems

I have found that the most useful antenna for Amateur Radio aboard boats is a vertical whip with the resonating coil

located near the center. These are made for use in Amateur mobile installations and work well when installed on most boats; they consist of a base or bottom section, a coil or resonator that is designed to make the antenna work in a particular band of frequencies, and a top section that can be adjusted to fine tune the system to a particular frequency.

A number of manufacturers make these antennas, and they are sold by distributors and dealers in Amateur equipment. There is not a great difference in performance between the various brands. Those with the larger coils are somewhat more efficient, but because the ocean serves as a perfect platform to launch the signal, most brands work well. A very popular one, the *Hustler*, made by New-Tronics, works very well in most marine installations. You have to purchase one base, or mast section, one universal ball mount, and a resonator for each frequency range required. Each resonator comes with the

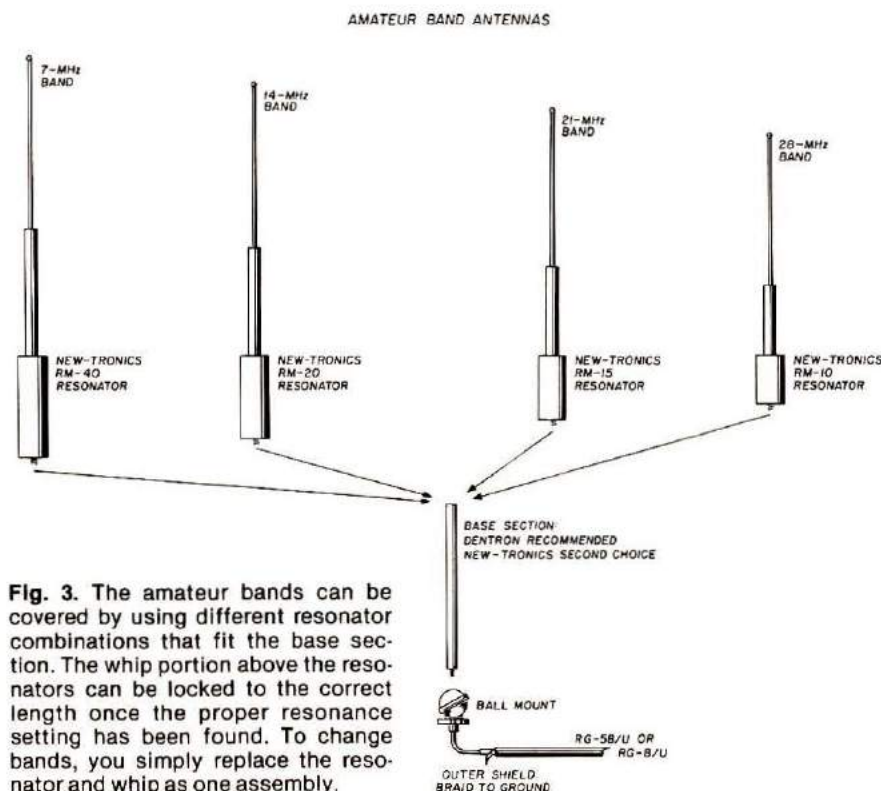
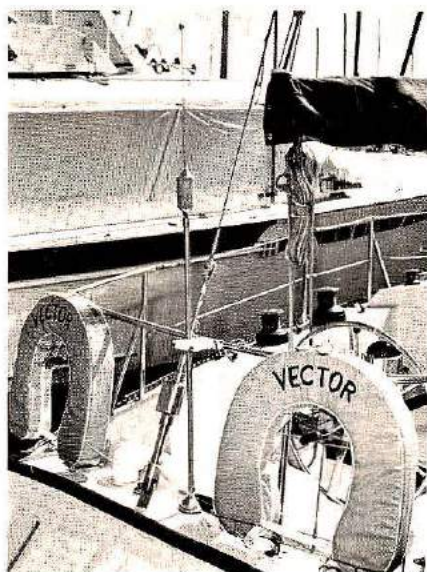


Fig. 3. The amateur bands can be covered by using different resonator combinations that fit the base section. The whip portion above the resonators can be locked to the correct length once the proper resonance setting has been found. To change bands, you simply replace the resonator and whip as one assembly.

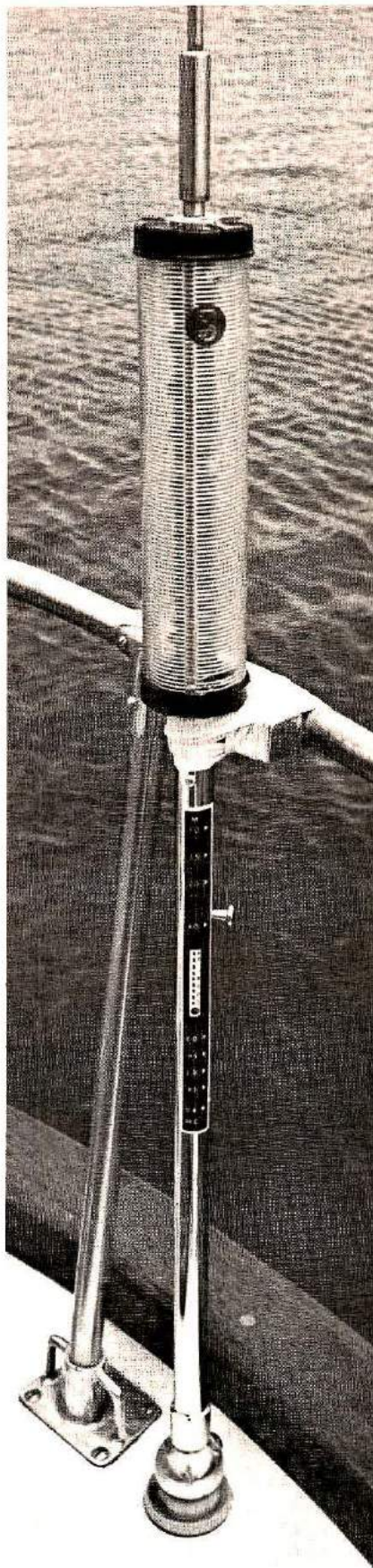
necessary top, or whip, section. Once the whip has been adjusted and locked to the correct length, it can be left alone for that frequency. When you change bands, it is only necessary to change the resonator. Some antenna configurations for use on the Amateur bands are given in Fig. 3; Fig. 4 shows how the Amateur antennas can be modified for use in the various Marine bands.

It is worth mentioning here that Amateur transceivers are not type-accepted for the Marine radio service and should not be used there. However, you can listen there as much as you like, and a modified Amateur antenna will perform very well when attached to your regular Marine transceiver. At any rate, it is worth knowing what must be done to make the maximum use of the antennas available on your boat.

One problem with the New-Tronics antenna is that it is built with a hinged base section (to permit the top portion to be placed in a horizontal position to allow a car to be driven into a garage). In marine use this joint tends to loosen up. A possible



A type of multiband whip antenna that requires that the coil and top section be changed to use a different band. A plastic block holds the whip for stability.



This multiband antenna permits operation on different frequencies by adjusting the loading coil. A block and tape secures the whip to the rail.

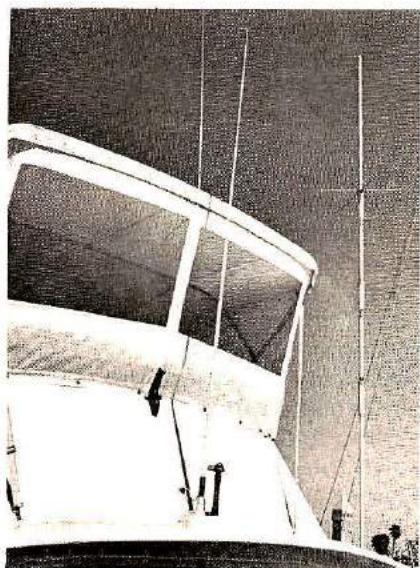
solution is to buy a Dentron, or Swan, base section instead.

There are two models of the *Hustler* available: one is rated for transmitter power up to 400 watts; the other will handle 1000 watts. Either one is satisfactory for marine use.

The vertical whip antenna has the advantage that you will still have an antenna even if the mast and all the rigging has been carried away. Changing bands does require a trip to the stern, but this doesn't have to be done too often, and is a small chore. A drawback of the whip is that it requires an exact adjustment for resonance at the operating frequency. A slight misadjustment will cause a severe loss of efficiency.

On most sail boats the best location is at the stern on the afterdeck. A ball mount such as is used on an automobile for cowl or deck mounting works well to get the antenna coax cable connections under the deck.

Further support for the antenna may be secured from the stern pulpit if there is one (Fig. 5). The ball mount at the very bottom of the whip antenna does not provide quite enough support, since in heavy seas the ship may be violently



Considerable operating flexibility is provided by the vhf antenna (foreground), and the multiband vertical whip to its right.

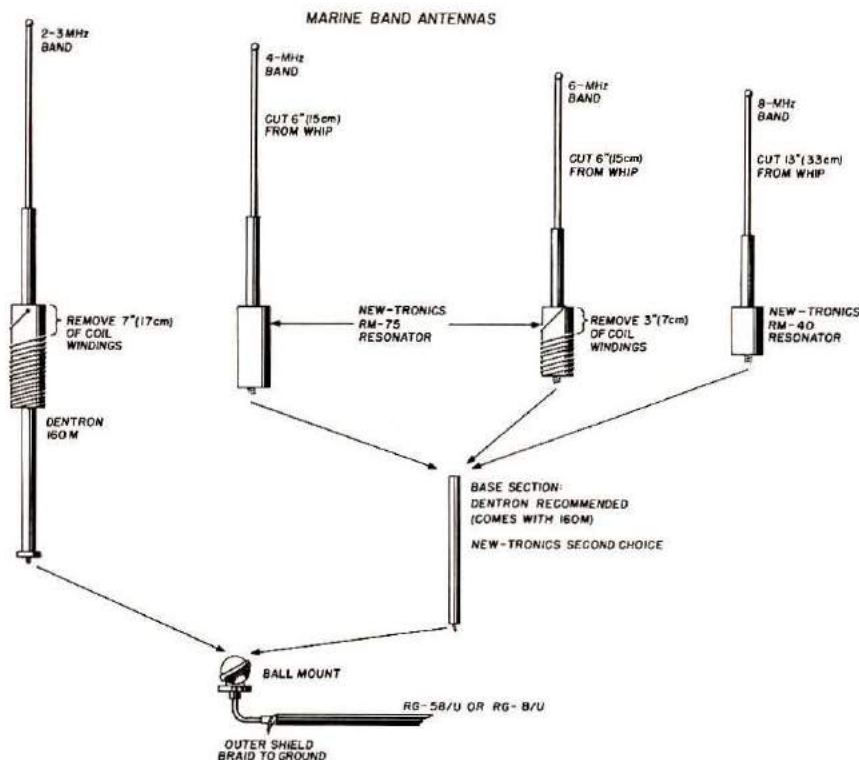


Fig. 4. To use the same antenna mounting system for the Marine radio frequencies, you can modify the resonators. Turns of wire can be removed from the coils, and a waterproof covering or spray applied after the modification. Color coding the resonators will help select the proper one for a particular band when you are in a hurry.

thrown back and forth. Also, people may grab the antenna for a hand hold. An insulated clamp arrangement where the whip goes near the stern pulpit will take care of this problem. Since there is only low rf voltage on the lower base section, insulation is not critical. A block of plastic with glass tape or metal clamp arrangement is adequate. You can probably find a suitable insulated support of the type designed for supporting the fiberglass-whip marine antennas.

If the sailboat is a ketch or yawl rig, the mizzen boom may present a problem (Fig. 5B). The whip can be tilted back at 45 degrees or more if necessary without deteriorating performance to any great extent, and this will usually solve the clearance problem. This position may make it less convenient to change resonators, but is about the only solution.

The poorest location for the whip antenna is on top of a mast. Contrary to what you may

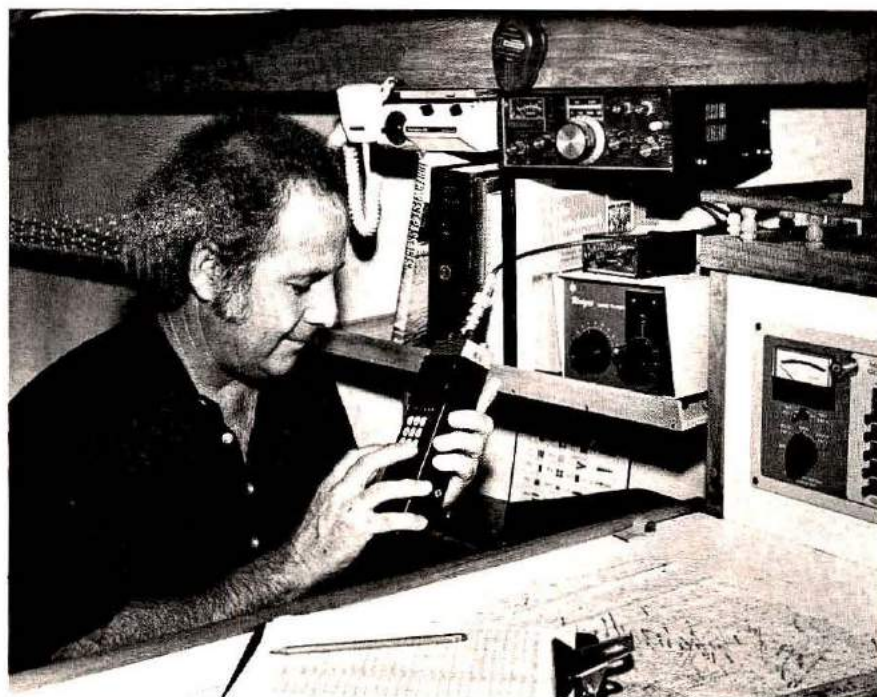
think, it will not work any better on top of the mast since the radio signal is essentially launched from the surface of the ocean, so by all means,

keep the whip down where you can easily reach it. Antennas for vhf present a different situation; because propagation is line-of-sight, with no benefit from an ionospheric reflector, vhf antenna height is very important.

It is sometimes difficult to find a good place to mount the antenna on a power boat. An important consideration is what type of ground system will be used. If the hull and superstructure is metal, the whip may be mounted almost anywhere since a ground connection will be available all over. If the hull is metal, but the superstructure is not, it's best to mount the whip down low, near deck level to have it close to the hull for the ground connection. If the hull is not metallic, a ground system must be established and this will determine the best antenna location.

Most offshore cruisers have a rail of some sort running along the deck on both sides. Often the portion up forward near the bow is metallic cable, the same as is used on sailboats. Most of the rail running aft is wood, but if the

A vhf Marine Band antenna can be used to increase the range of an amateur hand-held transceiver. Nearby repeaters extend the range even more.



underside can be lined with a narrow strip of stainless steel, ¼ inch (6.5mm) wide, or greater this will make an excellent ground plane. Remember that the ground straps must be jumpered at the gates. The whip can then be mounted anywhere near the rail, on the port or starboard side, or up forward near the bow. The coax cable outer shield should be connected directly to the life line/hand-rail ground system.

If a rail-level ground plane is not practical, it may be possible to install one under the deck. A strip of stainless steel can be run down both sides under the deck, or alongside the hull.

Insulated backstay antenna

This type of antenna requires an antenna tuner for adjusting its resonance to the desired frequency. The choice between the vertical whip and an insulated backstay depends on individual circumstances and requirements. The primary advantage of the insulated backstay is that it can be resonated to any frequency by adjustment of an antenna tuner which can be located near the transceiver. Thus, you can quite easily change bands without leaving the cabin.

Insulating the backstay is a relatively expensive operation, and has a disadvantage in that loss of the mast in a storm results also in loss of the antenna.

Another favorite among sailors is a doublet, or dipole,

antenna that can be hoisted on a halyard. This is similar to many antennas that are quite successful at home stations, and can provide excellent results. The ends should be fitted with small egg insulators so that any moisture in the halyard will not effect the performance.

License requirements

Any person who operates a radio transmitter of any kind must have a license to do so, and the license required to operate Amateur equipment is, naturally enough, an Amateur license. There are several grades of Amateur license available, ranging from the Novice who is allowed to use only Morse code within well defined frequency segments, up to the Amateur Extra, which allows all privileges on all Amateur frequencies. The Novice examination consists of sending and receiving Morse code at 5 words per minute, and a written test on Amateur rules, operating procedure, and basic electronic theory.

The Amateur General class license exam encompasses

more advanced theory and requires a code speed of 13 words per minute. This class of license carries both code and voice privileges throughout the Amateur bands but still within certain segments. The Advanced and Extra tests require even more theory and the Extra requires a higher code speed.

There is also a Technician class license, which is similar to the General in written content, but with the 5-word-per-minute code requirement. The Technician licensee has phone (voice) privileges on the vhf bands, and code privileges in the Novice segments on the high-frequency bands.

To take advantage of the frequencies that will provide the most useful and interesting communications, a General class license should be the minimum that an ocean-going sailor acquires. The Amateur 20-meter (14-MHz) band is very popular for talking from one continent to the other, and the 40-meter (7-MHz) band is more useful when closer to shore — although at times it becomes an intercontinental band too.

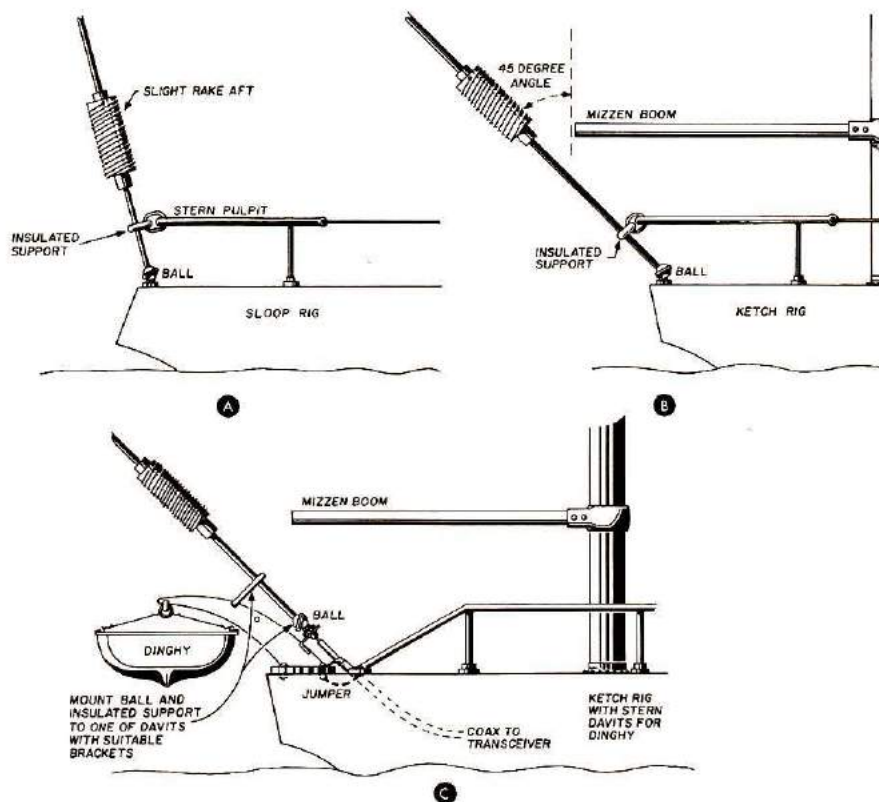


Fig. 5. The mizzen boom on some sailing craft may require some experimenting to find a way to mount the antenna so that it does not interfere. The antenna can be as much as 45 degrees from the vertical without seriously effecting performance. An insulated support bracket should be used to hold the antenna secure — the ball mount will work loose under the erratic motion of a boat. In all cases, the braid on the coaxial cable should connect to the nearest ground with a heavy wire or strap. Exposed ends should be treated or sealed to keep moisture out of the cable. The drawing is not to scale.

The phone (voice) segment of the 80-meter band, referred to as 75 meters, is very popular as a medium-distance band and is good when you are not too far offshore. However, maritime operation is not permitted on that band, by International treaty. Incidentally, I should clarify something here about maritime operation. The only time you should identify your Amateur station as "maritime mobile" is when you are in international waters. When you are within the coastal boundary of any country, you are portable or mobile within that jurisdiction. This includes rivers and coastal waterways and lakes.

There are many countries that permit Amateurs from other countries to operate within their territories; some grant a reciprocal permit, others allow an alien to acquire an Amateur license. If you plan to visit a foreign country and want to operate Amateur Radio there, you can often find out about the requirements from someone whom you talk to on the air. The American Radio Relay League, 225 Main Street, Newington, Connecticut 06111, has current information on license requirements and reciprocal agreements throughout the world. They can also advise you as to what governmental department to

write to and approximately how long it might take to process the licensing paperwork. Write to the Membership Services department at the above address, and send a self-addressed, stamped envelope to speed up the reply.

How to get started

As I mentioned earlier, some of the sources which helped you find out about Amateur equipment will also be able to help you get started toward acquiring an Amateur License. The ham who told you where to buy a rig, or what brand was okay, will probably be able to tell you where in the area there are radio clubs. Many clubs conduct Amateur licensing classes, and if you can spare a few hours a month you have a good chance to earn a license between boating seasons. If you are not near any group or club that is holding classes, there are many excellent study guides available that you can use at home and some cassette tapes that will help you learn the Morse code.*

There will also be a series of Questions and Answer articles right here in *Horizons*, to help

*ham radio's Communications Bookstore has an excellent selection of study guide material and code-practice tapes. Write for the "I Want to Become a Ham" package, *Ham Radio Horizons*, Greenville, New Hampshire, 03048.

people prepare for Amateur license exams.

Don't let that code business get to you; it is just like learning a foreign language, but much simpler. There are no dialects to learn, no accents to practice, and no tongue-twisting combinations of letters and sounds. Further, Amateurs all over the world know the language, and you'll have no trouble conversing with them in the international "Q" code that is the radio operator's shorthand. The French Amateur you are talking to may not speak a word of English, but when you send QTR? (what is the correct time?) he'll know exactly what you want, and will reply QTR 2150Z (the time is 9:50 PM, at Greenwich).

So, there you have some of the reasons for taking Amateur Radio along with you on your next cruise, and a bit of information about how it is done. I'll be looking forward to hearing some new voices and calls from out on the blue water. Excuse me, I thought I just heard a familiar voice signing maritime mobile on my receiver. Let me turn up the volume a bit . . . "G5ANV this is K3RXK — Good afternoon, Rutger. It's good to hear your voice again. How is the race going, and is the wind treating you well? . . ." **HRH**



About the author

When it comes to marine communications, Herb Johnson, W6QKI, of Oceanside, California, is eminently qualified to cover all parts of the field. He has been in the electronics industry for better than 30 years, starting in the Great Lakes area where he and a partner became known for getting improved performance from some almost useless 10-watt transmitters of the day.

He was the founder, in 1961, of Swan Electronics, a manufacturer of Amateur equipment, which he sold to the Cubic Corporation in 1967. Not one to sit idly on the sidelines, he then founded Atlas Radio Incorporated, of Oceanside, California, where he is still involved in the design of modern state-of-the-art equipment for Amateur use. More than 10,000 Atlas transceivers have been sold, and many of them have found their way aboard boats of all kinds.

Herb has been sailing for better than 15 years, and has been involved in long-distance racing for the past 10 years. He can often be found aboard his *Vector*, a customized, 38-foot (11.6m) CF-37 sloop shown on our cover this month. The Amateur transceiver aboard *Vector*? A 7-pound (3.2kg) 200-watt Atlas, of course.